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ABSTRACT

To improve vocational educational programs in agriculture, occupational information on a common core of basic skills within the occupational area of the agricultural-industrial equipment dealership set-up and deliveryman is presented in the revised task inventory survey. The purpose of the occupational survey was to identify a common core of basic skills which are performed and are essential for success in the occupation. Objectives were accomplished by constructing an initial task inventory to identify duty areas and task statements for the occupation. The initial task inventory was reviewed by consultants in the field, and 75 tasks were identified. A random sample of 70 agricultural-industrial equipment dealerships was obtained. Data were collected utilizing employer and employee questionnaires. Twenty-nine questionnaires were returned of which 26 were usable. A compilation of basic sample background information is presented on size of dealership, total work experience, employment at current job, and preparation as a set-up and deliveryman. A compilation of duty areas of work performed and work essential for the occupation is given. Percentage performance by incumbent workers and the average level of importance of specific task statements are presented in tabular form. (Author/EC)

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DETERMINATION OF A COMMON CORE OF BASIC SKILLS IN AGRIBUSINESS AND NATURAL RESOURCES

An Emperical Determination Of Tasks Essential To Successful Performance As An Agricultural-Industrial Equipment Set-Up And Delivery Man

DEPARTMENT OF AGRICULTURAL EDUCATION
THE OHIO STATE UNIVERSITY
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AN EMPERICAL DETERMINATION OF TASKS ESSENTIAL TO SUCCESSFUL PERFORMANCE AS AN AGRICULTURAL-INDUSTRIAL EQUIPMENT DEALERSHIP SET-UP AND DELIVERYMAN

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The Ohio State University
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FOREWORD

The Department of Agricultural Education at The Ohio State University is involved in a major programmatic effort to improve the curricula in educational programs in agriculture. One product in this effort is this report of the agricultural-industrial equipment dealership set-up and deliveryman task inventory survey. The data reported were collected as part of a more comprehensive thrust designed to develop a common core of basic skills in agribusiness and natural resources.

It is hoped that the revised task inventory contained in this report will be useful to curriculum developers working for improved occupational relevance in schools. Twenty-seven additional inventories in other occupational areas are also reported from this project.

The profession owes its thanks to Edgar Yoder, graduate research associate, for his work in preparing this report. Special appreciation is also expressed to William Davidson, Executive Director, Association of Farm and Power Equipment Retailers in Ohio, for his input and help in securing the cooperation of those employed in this occupational area.

J. David McCracken
Project Director

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INTRODUCTION

Occupational information is needed to develop and revise vocational and technical education curricula. Teachers and curriculum developers generally determine which skills might be taught in a program based upon teacher expertise, advisory committee input, informal and formal community surveys, and/or task inventories.

The Agricultural Education Department at The Ohio State University has utilized and revised a system for obtaining and using occupational information as an effective aid in planning, improving, and updating occupational education curricula. This report presents the results of a survey of the occupation, agricultural-industrial equipment dealership set-up and delivery-man. The information contained herein may be used by curriculum development specialists, teachers, local and state administrators, and others involved in planning and conducting vocational and technical programs in agriculture.

Purpose and Objectives

The major purpose of the occupational survey was to identify the skills which are performed and essential for success as an agricultural-industrial equipment dealership set-up and deliveryman. The specific objectives of this survey were as follows:

1. Develop and validate an initial task inventory for the agricultural-industrial equipment dealership set-up and deliveryman.

2. Identify the specific tasks performed by the agricultural-industrial equipment dealership set-up and deliveryman.

3. Determine the relative importance of the specific tasks to successful employment as an agricultural-industrial equipment dealership set-up and deliveryman.

Definition of the Occupational Area

The agricultural-industrial equipment dealership set-up and deliveryman is involved in setting-up, assembling, and delivering new equipment shipped from the factory to the dealership. The specific duties performed by the set-up and deliveryman will vary with the size and type of business. In general, the set-up and deliveryman will load and unload equipment and supplies; set-up and assemble machinery and equipment; perform pre-delivery service on equipment; explain equipment operation and maintenance procedures to customers; and assist in keeping records pertaining to delivery of equipment. In some firms, the set-up and deliveryman will also be called a mechanic's helper.

METHODOLOGY

Objectives were accomplished by constructing an initial task inventory, validating the initial inventory, selecting a sample of workers, collecting data, and analyzing data.

Initial Task Inventory

Duty areas and task statements for the agricultural-industrial equipment dealership set-up and deliveryman were identified by searching existing task lists, job descriptions, curriculum guides, reference publications, and service manuals. Additionally, contacts with two industry personnel aided in clarifying the specific responsibilities of the agriculture-industrial equipment dealership

set-up and deliveryman. All the tasks that the project staff thought to be performed were assembled into one composite list.

The initial tasks were grouped into functional areas called "Duties".

After the task statements were grouped under the proper duty areas, each task statement was reviewed for brevity, clarity, and consistency. In all, 209 task statements were included in the initial task inventory.

Initial Inventory Validation

After the initial task inventory was constructed, it was reviewed by four consultants employed in agricultural-industrial equipment dealerships. These consultants were either dealership owners or set-up and deliverymen.

The consultants were asked to respond to the initial task list inventory by performing the following activities:

1. Indicate whether any of the tasks listed were not appropriate.
2. Add any additional tasks they believed were preformed by the agricultural-industrial equipment dealership set-up and deliveryman.
3. Make changes in the wording of tasks to help add clarity to the statements.

The comments from the four consultants were pooled and needed revisions were made. Five duty areas were eliminated and two duty areas were combined.

As a result of the initial task inventory review process, 75 tasks were identified.

Worker Sample Selection

Since the specific duties and tasks performed by the individual agricultural-industrial equipment dealership set-up and deliveryman are related to the size and type of business where employed, an attempt was made to survey set-up and deliverymen employed in various sizes and types of equipment dealerships. It was not possible to secure a list of the specific names and addresses of all incumbent workers in the state. Therefore, a

sample of 70 agricultural-industrial equipment dealerships was obtained from the 1975 directory of the Association of Farm and Power Equipment Retailers in Ohio using a stratified random sampling approach. The strata used were type of business and geographical location.

Date Collection

A packet of materials was sent to the owner or manager of the randomly-selected agricultural-industrial equipment dealerships. The packet of materials included:

1. A cover letter from the Association of Farm and Power Equipment Retailers in Ohio.
2. An employer questionnaire printed on blue.
3. An employee questionnaire printed on yellow.
4. A stamped and self-addressed return envelope.

The manager or owner was instructed to complete the employer questionnaire and to have a responsible agricultural-industrial equipment dealership set-up and deliveryman complete the employee questionnaire. The manager or owner was instructed to collect the employee questionnaire and return both the employer and employee questionnaire in the stamped and self-addressed return envelope by the date specified in the cover letter.

A follow-up of non-respondents consisted of mailing a packet of materials two weeks after the initial mailing. The first follow-up consisted of a packet of materials identical to the initial packet except that a cover letter on Ohio State University stationery replaced the cover letter on Association of Farm and Power Equipment Retailers in Ohio stationery.

A final follow-up of non-respondents was initiated four weeks after the initial mailing. A telephone contact by a project staff member was made with 50% of the non-respondents. The non-respondents were asked to complete the questionnaire and emphasis was placed on the importance of their response to the success of the project during the telephone conversation.

Data Analysis

The 29 questionnaires which were returned were checked for completeness and accuracy by the project staff. Information from the 26 usable responses was coded on Fortran coding sheets for key

punching. In addition to coding appropriate respondent background information, each specific task statement was coded as to whether it was performed (1 = Task performed by respondent; blank = Task not performed by respondent) and the level of importance of the task (3 = Essential; 2 = Useful; 1 = Not Important). The information was keypunched on IBM cards and verified by personnel at the Instruction and Research Computer Center at The Ohio State University.

The data was analyzed using the SOUPAC computer program and the facilities of the Instruction and Research Computer Center. Consultant assistance for analyzing the data was provided by personnel at The Center for Vocational Education. The SOUPAC computer analysis resulted in the computation of relative frequencies, means, and rankings for each task statement. The results of the computer analyses were printed in tabular form for ease of interpretation.

FINDINGS

Objectives of the study resulted in the compilation of basic sample background information, the determination of tasks performed by the set-up and deliveryman, and the identification of tasks essential to successful performance as a set-up and deliveryman.

Description of the Sample

Information regarding the performance of tasks and the importance of the tasks to successful employment as an agricultural-industrial equipment dealership set-up and deliveryman was obtained from set-up and deliverymen in various dealerships across Ohio.

Response to the Survey

A total of 70 questionnaires were mailed and 29 replies were received. This represented a 41.4% rate of return. The response to the questionnaire is summarized in TABLE I.

Size of Dealership

Set-up and deliverymen from various size agricultural-industrial equipment firms were included in the study. The number of full-time equivalent (two one-half time set-up and deliverymen equal one full-time equivalent) set-up and deliverymen employed in the firm was used as an index to assess the size of the dealership where the set-up and deliveryman was employed. Of the 29 questionnaires received, 26 included information regarding the

TABLE I

EMPLOYEE RESPONSE TO THE QUESTIONNAIRE

	N	Percent of All Employees In The Survey
Employees in Survey	70	100.0
Total Returns	29	41.4
Usable Returns	26	37.1
Unusable Returns	3	4.3
Nonrespondents	41	58.6

size of the dealership. TABLE II summarizes the responses to the question, "How many full-time equivalent set-up and deliverymen are employed in your dealership?" Eleven set-up and deliverymen or 42.3% were employed in firms employing two full-time equivalent set-up and deliverymen. Six set-up and deliverymen or 23.1% were employed in firms employing one full-time equivalent set-up and deliveryman. Five set-up and deliverymen were employed in firms employing five or more full-time equivalent set-up and deliverymen. Seventeen set-up and deliverymen or 65.4% of the set-up and deliverymen were working in firms employing one to two full-time equivalent set-up and deliverymen. The number of full-time equivalent set-up and deliverymen employed in the firms ranged from one to seven. The average number of full-time equivalent set-up and deliverymen employed in the firms was 2.6.

TABLE II

SIZE OF AGRICULTURAL-INDUSTRIAL EQUIPMENT DEALERSHIP WHERE CURRENTLY EMPLOYED

Number of Set-up and Delivery-men Employed in Firm	N	Percent of Respondents
1	6	23.1
2	11	42.3
3	2	7.7
4	2	7.7
5 or more	5	19.2
Total	26	100.0

$\bar{X}$ number of set-up and deliverymen in the firm = 2.6

Total Work Experience

Set-up and deliverymen with varying amounts of work experience in the agricultural-industrial equipment industry were included in the study. TABLE III summarizes the responses to the question, "How many total years have you worked in the agricultural-industrial equipment industry?" Twelve set-up and deliverymen or 46.2% had from one to three total years of work experience in the agricultural-industrial equipment industry. Five set-up and deliverymen or 19.2% had from four to six total years of work experience in the agricultural-industrial equipment industry. Thus, 17 set-up and deliverymen or 65.4% had from one to six total years of work experience in the agricultural-industrial equipment industry. The total years of work experience in the agricultural-industrial equipment industry ranged from 1-36 years. Set-up and deliverymen had an average of 8.4 years of total work experience in the agricultural-industrial equipment industry.

TABLE III

TOTAL AMOUNT OF WORK EXPERIENCE IN THE AGRICULTURAL-INDUSTRIAL EQUIPMENT INDUSTRY

Years	N	Percent of Respondents
1-3	12	46.2
4-6	5	19.2
7-10	2	7.7
11-14	2	7.7
15-18	1	3.8
19-22	2	7.7
23 or more	2	7.7
Total	26	100.0

$\bar{X}$ years in the industry = 8.4

Employment at Current Job

Set-up and deliverymen in the survey had spent varying amounts of time in their present job. TABLE IV summarizes the responses to the question, "How many years have you worked at your present job?" Fifteen set-up and deliverymen or 57.7% had worked at their present job from one to three years. Four set-up and deliverymen or 15.4% had worked at their present job from four to six years.

Thus, 19 set-up and deliverymen or 73.1% had been employed at their current job from one to six years. The years of work at their present job ranged from 1-30 years. Set-up and deliverymen had been employed at their present job an average of 7.0 years.

TABLE IV

LENGTH OF TIME AT PRESENT JOB

Years	N	Percent of Respondents
1-3	15	57.7
4-6	4	15.4
7-10	2	7.7
11-14	1	3.8
19-22	2	7.7
27 or more	2	7.7
Total	26	100.0

$\bar{X}$ years at present job = 7.0

Preparation as a Set-up and Deliveryman

Set-up and deliverymen obtained training for their job from various sources. TABLE V summarizes their responses to the question "Where did you receive your training as a set-up and deliveryman?" Twenty-six set-up and deliverymen or 100% indicated they received training on-the-job. Three set-up and deliverymen or 11.5% indicated they attended a technical school or course to receive training as a set-up and deliveryman. Three set-up and deliverymen or 11.5% indicated they had received training as a set-up and deliveryman through their previous farm experience.

Duty Areas of Work Performed by the Set-up and Deliveryman

The 75 tasks were grouped under nine duty areas. Each respondent indicated whether he performed the specific task in his current position as a set-up and deliveryman. The percentages of respondents performing each task were averaged for all tasks under each duty area. The mean percentage of incumbents who performed specific tasks in specified duty areas is presented in

TABLE V

SOURCE OF TRAINING RECEIVED AS A SET-UP AND DELIVERYMAN

	N	Percent of All Employees In The Survey
On-The-Job	26	100.0
High School Program	2	7.7
Technical School Program	3	11.5
Adult Education Program	1	3.8
Farm Experience	3	11.5

TABLE VI.

Duty areas of work in which 50% or more of the incumbent workers performed the tasks were:

1. Performing General Office Procedures
2. Following General Safety Precautions
3. Using and Maintaining Service Manuals, Operator's Manuals, and Catalogs
4. Receiving Equipment and Other Merchandise
5. Pre-Delivery Servicing of Equipment
6. Using and Maintaining Hand and Power Tools
7. Operating Equipment and Company Vehicles
8. Picking-Up and Delivering Equipment
9. Assembling Equipment

Duty Areas of Work Essential for Successful Performance as a Set-up and Deliveryman

A level of importance rating was obtained for each task. The respondent would rate the task as essential, useful, or not important for successful performance as a set-up and deliveryman. A ranking of essential was assigned a numerical rating of "3", useful a numerical rating of "2", and not important a numerical rating of "1". The level of importance ratings for each task were averaged for all tasks under each duty area. The average level of importance ratings for the specific tasks in the specified duty areas are presented in TABLE VI.

Duty areas of work which received a 2.0 or higher level of importance rating by incumbent workers were:

1. Performing General Office Procedures
2. Following General Safety Precautions
3. Using and Maintaining Service Manuals, Operator's Manuals, and Catalogs
4. Receiving Equipment and Other Merchandise
5. Pre-Delivery Servicing of Equipment
6. Using and Maintaining Hand and Power Tools
7. Operating Equipment and Company Vehicles
8. Picking-Up and Delivering Equipment
9. Assembling Equipment

Percentage Performance and Level of Importance Ratings of Specific Tasks

The percentage performance by incumbent workers and the level of importance for each specific task is also presented in TABLE VI.

It is recommended that the results for each specific task be examined by educators and others who are developing educational programs to determine curriculum content for preparing agricultural-industrial equipment dealership set-up and deliverymen. Specific tasks with a high level of performance and a high level of importance rating should be given more emphasis in the educational program than specific tasks with a low level of performance and a low level of importance rating.

TABLE VI

PERCENTAGE PERFORMANCE AND AVERAGE RATING OF IMPORTANCE* OF SPECIFIC TASKS

TASK STATEMENTS	Percent Performing	Average Level of Importance
Performing General Office Procedures		
File delivery reports	38	2.1
Meet people	76	2.3
Use telephone	53	1.9
Write memos and notes	61	2.0
File service manuals, operator's manuals, and technical publications	50	2.1
Use two-way radio	23	1.8
Mean Rating	50.2	2.0
Following General Safety Precautions		
Follow safe work habits	84	2.8
Identify potential safety hazards	69	2.8
Use fire extinguishers	69	2.7
Wear appropriate protective clothing	69	2.7
Ventilate work areas	69	2.7
Interpret information on labels and signs	76	2.5
Use proper lifting and carrying methods	80	2.9
Store inflammable materials safely	65	2.8
Wear appropriate work clothing	84	2.7
Adjust safety shields	76	2.8
Correct potential safety hazards	65	2.8
Remove debris from work areas	76	2.8
Use electrical cords and connections safely	80	2.9
Mean Rating	74.0	2.8
Using and Maintaining Service Manuals, Operator's Manuals, and Catalogs		
Locate the specifications for the equipment	61	2.5
Locate appropriate manuals for specific equipment	57	2.5
Interpret sketches and figures in manuals	76	2.8
Mean Rating	64.7	2.6

*Average rating of importance may range from 1-3 with 3 being the highest

TABLE VI (Cont.)

PERCENTAGE PERFORMANCE AND AVERAGE RATING OF IMPORTANCE OF SPECIFIC TASKS

TASK STATEMENTS	Percent Performing	Average Level of Importance
Receiving Equipment and Other Merchandise		
Check items received against packing slip or bill of lading	76	2.7
Inspect items for damage during transport	76	2.9
Unload shipments	80	2.9
Handle stock to avoid damage	76	2.8
Mean Rating	77.0	2.8
Pre-Delivery Servicing of Equipment		
Grease equipment	76	2.8
Inflate tires to proper pressure	80	2.8
Adjust belts	61	2.6
Adjust chains	65	2.5
Oil equipment	73	2.7
Mean Rating	71.0	2.7
Using and Maintaining Hand and Power Tools		
Adjust tools	65	2.7
Clean tools	76	2.7
Identify tools	57	2.5
Interpret tool operation instructions	53	2.3
Recondition and fit tools	42	2.2
Select tools for a specific job	80	2.6
Store tools	73	2.5
Use hand tools safely	80	2.8
Use power tools safely	80	2.9
Mean Rating	67.3	2.6
Operating Equipment and Company Vehicles		
Interpret gauge readings on equipment and trucks	73	2.9
Operate equipment and vehicles on public highways	76	2.8
Connect front end operated equipment	65	2.7
Correct potential safety hazards	76	2.8
Connect 3-point hitch implements	80	2.7

TABLE VI (Cont.)

PERCENTAGE PERFORMANCE AND AVERAGE RATING OF IMPORTANCE OF SPECIFIC TASKS

TASK STATEMENTS	Percent Performing	Average Level of Importance
Tow equipment	69	2.5
Identify potential safety hazards	69	2.5
Adjust equipment safety shields	65	2.5
Interpret hand operating signals	73	2.6
Interpret safety and operating instructions in operator's manuals	76	2.6
Interpret safety symbols on equipment and vehicles	80	2.8
Refuel power units	80	2.8
Use proper equipment and vehicles for specific jobs	84	2.9
Mean Rating	74.3	2.7
Picking-Up and Delivering Equipment		
Complete delivery reports	57	2.5
Identify location for pick-up and delivery	80	2.7
Select proper delivery routes	69	2.6
Secure equipment on truck with chains and binders	88	2.9
Load according to vehicle load limits	84	2.8
Load and unload items on truck	84	2.9
Hitch equipment to truck for delivery	76	2.7
Describe use of equipment operator's manual to customer	69	2.5
Describe general equipment operating procedures to customers	69	2.5
Describe general equipment maintenance procedures to customers	65	2.5
Mean Rating	74.1	2.7
Assembling Equipment		
Install chains	76	2.7
Install controls	76	2.7
Check packing list against parts and hardware in bundles	76	3.0
Follow written assembly instructions	84	2.9
Identify and use appropriate hardware items for assembly	80	2.8
Inspect assembled equipment for operating defects	75	2.8
Interpret assembly diagrams	79	2.8
Use proper tools and equipment to assemble	79	2.8
Separate hardware items into piles	71	2.5
Arrange parts for ease in assembly	75	2.5

TABLE VI (Cont.)

PERCENTAGE PERFORMANCE AND AVERAGE RATING OF IMPORTANCE OF SPECIFIC TASKS

TASK STATEMENTS	Percent Performing	Average Level of Importance
Tighten bolts in proper sequence.	79	2.8
Inspect parts for damage.	71	2.6
Mean Rating	76.8	2.7